ITEM LEVEL SURVEY OF BOUND MATERIALS

Town Clerk's Office
Town of Westford
Westford, MA

November 7, 8 and 9, 2007

Mary Patrick Bogan
Senior Conservator
Northeast Document Conservation Center
100 Brickstone Square
Andover, MA 01810-1494

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I. INTRODUCTION

At the request of the Town Clerk, Kaari Mai Tari, Mary Patrick Bogan, Senior Book Conservator at the Northeast Document Conservation Center, visited the Town Hall in Westford, Massachusetts to conduct an item-by-item survey to assess the needs of bound materials in the Town Clerk's Office. The survey was conducted over a three-day period in November 2007. The survey was financed by a Community Preservation grant recommended by the Community Preservation Committee and appropriated by Town Meeting. Kaari Mai Tari provided information regarding the contents, use and organization of the collection as well as technical support in the form of data entry.

The purpose of this report is to describe the nature and condition of the bound collections, to make general recommendations regarding conservation of bound materials, to outline non-treatment preservation strategies, collection care strategies and conservation treatment needs, and to provide guidelines for setting priorities. The report is not intended as a general preservation needs assessment of the collection, nor as a comprehensive collection-level survey. Because the purpose of the survey was to provide specific brief descriptions and treatment recommendations for as many items as possible, evaluation of general preservation issues was only cursorily considered. General preservation issues are addressed only as they directly relate to the needs of the specific collection examined and its storage conditions. Many other general preservation topics such as fire prevention, security and emergency preparedness are beyond the scope of this report and will not be discussed or will be mentioned only briefly. The preservation section of the report is meant as a general planning tool despite its limited scope. Some general preservation and collection care information in publications such as NEDCC's technical leaflets available at www.nedcc.org and information in *CCI Notes*, a publication of the Canadian Conservation Institute, are referred to throughout the report.

The Town Clerk provided a database listing 305 volumes prior to the site visit, and as many volumes as possible in the database were inspected. Approximately one hundred twenty volumes, or 39% of the collection, were examined individually. Representative samples of similar materials were examined and general treatment recommendations are made for groups of similar materials with particular types of damage. Descriptions and treatment recommendations for some volumes examined are listed at the end of the report. Some treatment recommendations are based on the surveyor's prior knowledge of similar materials. Treatment proposals are intended to serve as an aid in preservation planning and in setting priorities. Because examination was cursory, any prices quoted are approximate and non-binding; firm estimates cannot be provided without more thorough examination in the laboratory. Treatment proposals may change when materials are examined more closely. Nevertheless, proposed treatments are expected to be appropriate and estimated costs relatively accurate.

Included with this report are a printed version of some of the observations made during the site visit and a copy of the database on a disc.

II. INSTITUTIONAL BACKGROUND

Westford, Massachusetts, a community with a population of approximately 21,000, is located 23 miles northwest of Boston. The town was incorporated in 1729 and early written records predate incorporation. The town clerk's office is required by law to retain and preserve the records and archives of the town which typically include land records, indices, maps, vital statistics, election records, meeting minutes and committee reports. Westford's Town Clerk's Office has a collection of approximately 305 bound volumes.

Most town offices are housed in a historic structure known as Westford Town Hall located next-door to the police and fire station. The building, constructed in 1870, is wood-framed with a stone foundation and a steeply-pitched slate roof. There are two floors, an attic and basement. Some systems, including electrical and plumbing, were partially updated in 1999. Windows were replaced in the 1970's, and a cement floor was poured in the 1990's to cover the basement's dirt floor. While the interior of the building (where offices are located) is relatively well-maintained, the basement and exterior of the structure are not. There is no established maintenance schedule and no written log of physical plant problems and upkeep.

Rain water drains off the roof. Exterior paint is peeling. Gutters are detached from the building and are not cleaned or maintained. The fieldstone foundation is not sealed. There are "French drains" in the basement; installation of an additional basement drainage system is planned. Past ceiling and air conditioning leaks, as well as general basement wetness, has led to mold growth in the basement and on materials stored there.

There is central air conditioning throughout the building, but there are no central mechanisms for humidification or dehumidification. The temperature is set to 71°F in the winter and 75°F in the summer. There is no climate control in the basement, although there is a dehumidifier present. An air handling system is located in the attic, but many vents throughout the building are blocked by furniture. Collection areas were monitored at one time with a datalogger through the Environmental Monitoring Program of the Massachusetts Board of Library Commissioners. Environmental conditions are far from ideal for proper storage of collections. Mold outbreaks in the basement are indicative of inadequate systems and building maintenance.

The ground floor houses the town clerk's office and other town departments and offices. The clerk's office is workspace for a full-time town clerk, 1 ¾ full-time support staff and three volunteers who provide additional half time office support. The office is tightly filled with three desks and computer work stations, a service desk, glass-fronted bookshelves and a variety of other storage units and pieces of equipment needed in a busy public service office.

A small vault for storage of some records is located within the clerk's office space and a painted wooden glass-fronted bookcase within the office holds some commercially bound volumes. The clerk's office vault, approximately 5'x 8' in size, has no exterior windows and is lit by a single unprotected overhead light bulb. Wooden shelving is built into the space; the shelves are not adjustable. The vault shares a wire mesh wall with the

Assessor's Office; office supplies are stored in the assessor's side of the space. A metal door with a combination lock closes the clerk's office vault. In addition to bound records, some microfilm and a few office supplies are stored in the vault. The bookcases in the office hold commercially bound copies of *Annual Town Reports*. A second storage vault is located in the basement. The basement vault is approximately 8'x 10' in size and is lined with old and rusted metal and wood shelving. It also has a metal door which is never closed because the locking mechanism cannot be opened. The *Tin Box* collection was housed in the vault until recently. Approximately sixty financial ledgers from the early 1900s are still housed on shelves in the basement. These volumes were not examined during the survey.

The books in the town clerk's collection are accessed daily, with an average of 100 public record requests each year.

According to the Town Clerk, at the time of the site visit, a structural engineer had been engaged to assess the structural integrity of Town Hall, a 19th century structure not built for its current use. Files and records, as well as furniture, equipment and staff from all the town departments presumably add a significant weight load to the crowded building. Since the visit and the writing of the bulk of this report, the building has been deemed structurally unsound. Employees and offices have been moved out of the building and into temporary locations.

The entire collection, except for the vital records that the Town Clerk's Office uses regularly and transferred to their temporary location, remains in the evacuated Town Hall building. The Town Clerk hopes to move materials from both vaults to an off-site location. The future of the building and its use as Westford Town Hall is uncertain. A recent communication from the Town Clerk indicates that town administrators do not have a plan for preserving permanent records. Town administrators and staff may consider this to be an opportunity for enacting great improvements to the work and storage environment of Town Hall as well as developing a long-range preservation plan for permanent records.

III. NATURE AND CONDITION OF THE COLLECTION

A. Nature

Volumes in Westford's town records collection are bound in leather, cloth and paper. One volume surveyed is bound in parchment over stiff boards. Many volumes in the collection remain in their original bindings. Volumes are bound in full, half and quarter tanned leather, cloth, and paper. Bindings range from historic structures to commercial library bindings.

Paper varies in the collection from good-quality rag to ground wood pulp paper to newly recycled paper. A few volumes are typescript on onion skin paper. Text is both

printed and manuscript, and in early ledgers may be written in a variety of iron gall inks. Some of the iron gall inks appear friable. Entries and marginalia in later volumes are in graphite pencil and a variety of inks, including ball point.

The leaf attachment of textblocks varies. Most sewn volumes are sewn through the fold and the sewing is generally intact, although the sewing in a few volumes appears to have been purposely removed, perhaps for microfilming. Some textblocks are oversewn, stab sewn or stapled. In addition, some textblocks are bound using metal posts or ring binders. Some annually issued publications are adhesive bound.

Virtually none of the collection is housed in protective enclosures.

B. Condition

The overall physical condition of the collection varies from stable to deteriorated. Virtually all of the volumes would benefit from surface cleaning and protective housing. The bindings, edges of the text blocks and the pages of most volumes are dirty. Many leather-bound volumes are powdery. Publications have been printed on a variety of paper, including recycled paper. It is likely that a fair amount of the paper throughout the collection is acidic, either as a result of its original content (ground wood pulp paper, newly recycled paper, eg.), poor storage conditions or iron gall ink damage.

IV. PRESERVATION PROGRAM REQUIREMENTS

Two concepts are necessary for evaluating the adequacy of preservation in any library or archives:

> "Responsible custody" is defined by the Commission on Preservation and Access Task Forces on Archival Selection as the provision of "a level of environmental management, housing, care and maintenance that will retard further chemical deterioration and protect materials from physical damage." [1] These preventive measures include climate management, protective enclosures, fire detection and suppression, effective security, disaster planning, and training staff and users to handle and care for the collection appropriately.
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> "Optimal Storage" is defined as meeting or exceeding the guidelines proposed by professional organizations and national standards-setting organizations. Such guidelines and standards are authored by committees made up of professionals in the field, and they are informed by recent scientific research into the deterioration of collections. The challenge for standards-setting organizations (and for collections-holding institutions) is to translate scientific findings into practical and affordable recommendations for storage. In many cases, optimal storage may not be achievable,

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[1] Task Forces on Archival Selection. The Preservation of Archival Materials. Washington, DC: The Commission on Preservation and Access, April 1993, p. 3.

but institutions should be aware of the ideal as they work towards providing the best conditions possible.

Every institution should provide responsible custody for all its collections. The provision of optimal storage conditions for collections of long-term value to the institution should be a primary goal.

A. Collection Management

The preservation planning process must be firmly based on and undertaken within the context of a clearly defined institutional mission statement and collection development policy. Where resources are limited, it makes the most sense to limit collections to those that serve the real needs and mission of an organization. Deaccessioning and gift policies must allow an institution to deaccession or refuse materials that either do not fall within the parameters established by the collection development policy or that present preservation problems so serious that they outweigh the value of the materials to the institution.

Even within a collection that has been focused, some materials will normally justify more extensive preservation activities than others by virtue of their importance. Collections may be valuable for a number of reasons, among them rarity, monetary value, frequency of use, artifactual value, and legal value. The library and archives communities call the process of prioritizing collections for preservation action, and the resulting decisions, “selection for preservation”. This process can be difficult, since in practice preserving one collection often means not preserving another, but selection is essential to successful preservation planning.

Intellectual control of an institution's entire holdings is fundamental to systematic preservation planning because effective preservation decisions cannot be made for incompletely known collections. Intellectual control systems, especially when they have been automated using a standard MARC (Machine Readable Cataloging) format for libraries, can also assist systematic comparison of an institution's holdings with those of other repositories.

An institution’s collections management policy is also essential to the preservation of its collections. Policies and procedures for preventive preservation activities (such as those governing security, patron use of materials, collections processing, loaning collection materials, exhibiting collections, preservation-quality library binding, environmental monitoring, and storage procedures) should be included in the collection management policy. Clear and well-considered policies that are universally enforced will make preventive preservation measures routine and lengthen the useful life of collections. (See “Preservation Assessment and Planning” and “Collections Policies and Preservation” at www.nedcc.org for further discussion of selection and collections policies.)

Adequate staffing is crucial to maintenance and preservation of library and archives collections. Some preservation projects such as weeding, shelf maintenance,

and rehousing of collections do not necessarily require a large investment of money, but they do require a commitment of staff time. Investment in staff time to carry out preservation activities will result in a longer life for collections.

Finally, adequate space is essential for proper collections maintenance and preservation. Overcrowding materials on shelves and stacking materials on the floor exposes them to distortion, damage during removal and reshelving, and damage from water. For any library or archive, collections represent a capital investment that must be maintained in the same way that buildings and equipment are maintained. The most basic element of such maintenance is the provision of sufficient safe and appropriate storage space.

Westford. Few general preservation issues were discussed during the site visit, because the focus of the visit was to perform an item-by-item survey. Written information provided by the Town Clerk (from the self-survey conducted during a preservation course) reveals that comprehensive collection management and preservation plans for the building and collections do not exist. Standards described in this report should assist staff and administration in creating these much needed documents and procedures.

The lack of adequate environmentally-managed storage is the most serious problem facing the Town of Westford. According to the Town Clerk, staff and town administrators are working on a preservation plan that includes a stated long-range goal of building an "archives center" for the town.

Creating an emergency preparedness and response plan should be included in the management plan if one does not already exist. (An electronic template of an emergency response plan is available at no charge at www.dplan.org.) All of these efforts will require significant time and effort. Support from town administration will be needed to be successful.

Steps to establish intellectual control of the collection have been taken in the past, although continued effort is needed. During the survey, the content of a few items was uncertain and was thought to be redundant in several volumes. These items were removed from the storage area; presumably they will be deaccessioned. The Town Clerk maintains a database with the title, year and reformatting status of bound materials as the electronic record of collection holdings. Since some items in the collection are not permanent records, a retention schedule established by the state archives, a branch of the Public Records Division, is used as a guide for destruction. Most documents are not cataloged, but simply filed.

Preservation needs are met currently by Ms. Tari, her staff and the Records and Archives Management Committee, members of which include representatives from the J. V. Fletcher Library Historical Commission and the Historical Society. Ms. Tari's position as Town Clerk significantly limits the time available to undertake preservation projects. The Committee and some volunteers assist with projects where possible. Staffing, funding and storage are all inadequate considering the significant condition and need of the collection. No staff member is formally trained in the preservation of paper-

based objects or bound volumes, even though the town clerk's office has a designated responsibility to preserve and permanently retain all town records in their jurisdiction. Although this is likely the case for all towns in the Commonwealth, the lack of a staff member devoted solely to the ordering and preservation of paper-based objects in a collection can place materials in jeopardy of suffering loss and damage from improper handling, disorder, and neglect.

Funding for microfilming and preservation supplies are subject to annual appropriation. In the current year, $4,000 (from capital funds) was allocated for microfilming and $3,000 (from the Town Clerk's operating budget) was allocated for archival supplies.

Recommendations. It is excellent that use of materials in the Town Clerk's care is carefully controlled, and that staff is aware of the many preservation needs of this archival collection. A coordinated effort to develop a preservation plan and build an archives center for the town is a commendable goal that should be supported and encouraged. Because the town is required to permanently retain and preserve the majority of its holdings, proper practices and adequate funding must be established and provided. Standards for paper quality, content, and printing are set by the Public Records Division. Permanent funding should be provided for storage, deacidification, housing, reformatting and conservation.

The database should be reviewed and corrected. Titling of materials should be consistent and as standard as possible. While it is likely that all items in the historical collection will be kept, all bound materials should be properly identified and evaluated for retention. In addition, all loose scraps found in volumes should be identified and their correct placement noted. Loose materials that do not belong should be matched to the correct volume or removed.

As volumes are fully identified, identification tags that bear the correct title and date made of text weight paper could be inserted in each volume between the endleaves and boards. Whether the volumes are housed in boxes or on shelves, the tags will make it possible to locate and order volumes readily.

B. Climate: Temperature, Relative Humidity, and Air Quality

General information regarding environmental management, air quality, light abatement and monitoring temperature, relative humidity and light is available at www.nedcc.org.

1. Temperature and Relative Humidity

Poor environments reduce the life span of paper and related materials. For library and archival collections, control of *relative humidity* is crucial. Moisture provides the catalyst for chemical reactions within paper that lead to acid formation. Paper is hygroscopic; that is, it readily absorbs and releases moisture from the surrounding

atmosphere, expanding and contracting as it does so. This adds dimensional changes to chemical deterioration and can accelerate deterioration and cause visible damage such as cockling of pages. Excessive moisture also causes mold and foxing and favors insects. At the other extreme, very low relative humidity (often found in winter in centrally-heated buildings) can desiccate and embrittle some materials.

Control of *temperature* is also very important; heat accelerates deterioration by speeding up damaging chemical reactions. The deterioration rate of cellulose appears to double with every temperature increase of about 9°F, independent of other factors. In light of this rapid acceleration of deterioration, James Reilly of the Image Permanence Institute has stated that "room temperature", i.e. 70°F, is too warm for long-term storage of paper-based materials. Research also shows that raising the temperature five degrees for five hours per day negates virtually all of the benefit of the other 17 hours at a lower temperature, making a steady temperature a necessity for proper storage.

There is no national standard for storage environments for paper collections. The scientific evidence is clear, however: lower temperature and lower relative humidity greatly extend the usable life of paper collections. The National Information Standards Organization (NISO) issued a technical report in 1995 entitled Environmental Guidelines for the Storage of Paper Records.[2] This publication gives suggested values for temperature and relative humidity for storage of paper records in libraries and archives:

Situation	Temperature	Relative Humidity
Combined stack and user areas	70 °F maximum*	30-50% RH**
Stacks where people are excluded except for access and retrieval	65 °F maximum*	30-50% RH**
Optimum preservation stacks	35-65°F***	30-50% RH**
Maximum daily fluctuation	±2°F	±3% RH
Maximum monthly drift	3°F	3%

* These values assume that 70°F is about the minimum comfort temperature for reading and 65°F the minimum for light physical activity. Each institution can make its own choice

** A specific value of relative humidity within this range should be maintained ±3%, depending on the climatic conditions in the local geographic area, or facility limitations.

*** A specific temperature within this range should be maintained ±2°F. The specific temperature chosen depends on how much an organization is willing to invest in order to achieve a given life expectancy for its records.

- from *Environmental Guidelines for the*

[2] Wilson, William K. *Environmental Guidelines for the Storage of Paper Records.* NISO Technical Report (NISO-TR01-1995). Bethesda, MD: NISO Press, 1995.

Storage of Paper Records, p. 2.

In most buildings in the Northeast, mechanical systems for both humidification and dehumidification (in excess of the dehumidification provided by air conditioning) are required to maintain the specified RH control. Excellent information on climate management systems for libraries and archives can be found in William Lull's 1995 publication *Conservation Environment Guidelines for Libraries and Archives*.[3]

b. Environmental Monitoring

Temperature and relative humidity should be systematically documented wherever collections of permanent value are stored. A climate-monitoring program can document existing conditions, warn of unexpected problems, and support requests to install or alter environmental controls. Monitoring devices vary greatly in their complexity and effectiveness, so it is important to choose the instrument most appropriate to your situation. Detailed information about monitoring options can be found in "Monitoring Temperature and Relative Humidity" at www.nedcc.org.

c. New Directions in Environmental Management

As the economic and other limitations faced by most collections-holding institutions have become increasingly clear, recent scientific research has focused on designing tools that will help librarians and archivists manage existing storage environments to maximize collections preservation and help them convince resource allocators that improvements in climate control are a worthwhile investment. A Commission on Preservation and Access publication, New Tools for Preservation: Assessing Long-Term Environmental Effects on Library and Archives Collections describes a very promising tool for this type of collection management, developed by the Image Permanence Institute in Rochester, NY. [4]

New Tools for Preservation introduces the concept of the Time-Weighted Preservation Index (TWPI). Using short-lived organic materials (those with expected life spans of ±50 years, such as magnetic tape or newsprint) as a baseline, TWPI provides a general indication (in years) of how long collections might be expected to survive in a particular storage area. Unlike previous tools, TWPI takes into account the fact that conditions in any one storage space are constantly changing, so TWPI provides the first "real-life" assessment of the quality of storage areas. TWPI measurements have many uses, but one common use might be the comparison of different storage areas in a building to determine which one is best for storage of valuable collections. TWPI measurements can also be used to determine that none of the existing storage areas can provide the desired lifespan for collections and to argue for improvements in climate

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[3] Lull, William L. with the assistance of Paul N. Banks. *Conservation Environment Guidelines for Libraries and Archives*. Ottawa: Canadian Council of Archives, 1995.

[4] James M. Reilly, Douglas Nishimura, and Edward Zinn. *New Tools for Preservation: Assessing Long-Term Environmental Effects on Library and Archives Collections*. Washington, DC: The Commission on Preservation and Access, November 1995. Available from the CPA, 1400 16th St. NW, Suite 740, Washington DC, 20036-2217; 202-939-3400.

control systems.

Measurement of TWPI is very complex, and the Image Permanence Institute (IPI) has developed a monitoring instrument that will calculate and display both current temperature and relative humidity readings and TWPI.

2. Air Quality

Dirt and dust particles soil and abrade paper. Gaseous pollutants such as sulfur dioxide and nitrous oxides generated from automobiles and industry, peroxides, and ozone catalyze chemical reactions that lead to acid formation in paper. Ductwork may also carry mold. Exposure of collections to particulate and gaseous pollutants should be controlled to the extent possible. Where exposure cannot be controlled, materials should be enclosed in chemically stable protective enclosures. (See "Temperature, Relative Humidity, Light and Air Quality: Basic Guidelines for Preservation" at www.nedcc.org for additional background information on controlling the environment.)

Westford. Staff has some awareness of environmental storage standards for collections of permanent value. Unfortunately funds, staffing and support for maintaining the town hall building and environmental management practices have been lacking in the past.

Recommendations. Detailed discussion of the environmental issues is beyond the scope of this report. Nevertheless, it important to note that conditions in the collection storage areas (the vault in the Town Clerk's Office and the vault in the basement) do not meet conservation standards for collections of permanent value, despite efforts by staff to maximize conditions with the tools available to them. The current storage conditions of the collection following the closure of the Town Hall building are uncertain.

The presence of mold is especially concerning. Any mold-damaged materials in the office vault should be separated from the collection. Materials should be immediately removed from the basement and assessed for mold damage. No articles of importance should be stored in the basement. The bindings and textblocks of mold-damaged volumes should be cleaned using a HEPA-filtered variable-speed vacuum as soon as possible. They should be cleaned by someone experienced in handling fragile bound material. It is essential that appropriate personal protective equipment (OSHA-approved fit-tested respirators, goggles, gloves, protective clothing, etc.) is worn when cleaning these volumes. Please refer to the OSHA website at http://www.osha.gov/SLTC/personalprotectiveequipment/index.html for more detailed information.

Materials that were water damaged previously and have mold damage should be considered priorities for preservation action. Fungal growth should be removed using a HEPA-filtered variable-speed vacuum. Volumes should be housed in protective enclosures to isolate them from the rest of the collection and monitored closely for additional mold growth, or deaccessioned. If possible, mold-damaged records that do not need to be retained permanently should be vacuumed, reformatted and the originals

discarded. Mold-damaged materials are problematic in terms of health and safety issues for staff and researchers and for other collections because of cross-contamination.

Mold contamination and remediation are complex issues and much research is still needed to develop standards for effective treatment, safe storage, and use of mold-damaged materials. Prevention of mold activation and germination by maintaining a controlled environment is the foremost method of restricting fungal activity.

The most effective treatment of mold-damaged materials is to surface clean with a HEPA-filtered vacuum to reduce fungal structures. It is important to note that mold-damaged materials remain more susceptible to mold growth in the future than paper-based materials without previous mold-damage even after cleaning. Storage under carefully managed environmental conditions and close monitoring of the materials are imperative to inhibit further growth.

OSHA has no standard for acceptable exposure limits to mold. The volatile organic compounds (odor) and particulates associated with mold can act as irritants, sensitizers, allergens or toxins depending on dose and time exposure. Individuals with asthma, allergies to penicillin, known allergies to mold, compromised immune systems, etc. should probably avoid using the materials. Use of personal protective equipment is advisable for any prolonged exposure to the materials. In general, use of mold-damaged materials should be restricted. For further information, please refer to Heritage Eaters by Mary-Lou Florian (1997); Conservation OnLine (CoOL), "Conservation Topics: Mold." http://palimpsest.stanford.edu/bytopic/mold/; and "Emergency Salvage of Moldy Books and Paper" at www.nedcc.org. The health and safety bulletin "A Brief Guide to Mold in the Workplace" is available at http://www.osha.gov/dts/shib/shib101003.html.

The town should purchase a data logger or a recording hygrothermograph so that temperature and relative humidity can be monitored and recorded. Documenting conditions will be valuable to administration and environmental engineers in planning for improved conditions

An environmentally-managed chamber, such as a Bally Box, might provide much-needed storage space for the Town Clerk's collection. Bally modular structures are used in the hospital, scientific and manufacturing sectors, where environmental control is required. More recently, these "rooms within a room" have been employed by libraries and archives to address collection storage needs. A structural engineer should determine the feasibility and safety of installing a unit in the basement of Town Hall following its renovation, or in another building or facility. Please consult Bally at www.ballyrefboxes.com/ for more information. Installing a Bally Room does not eliminate the need to treat mold-damaged materials. Westford's mold-damaged materials should not be moved into a Bally Room, or any space used for permanent storage, without prior treatment

C. Light Protection

All light accelerates paper deterioration by providing energy to fuel damaging chemical reactions within paper. This can cause paper to fade, yellow, or darken, and media to fade or change color. Damage is cumulative and irreversible. Its extent is determined by the intensity of the light and the length of exposure. All components of light, including the ultraviolet (UV) (present in natural light and artificial fluorescent, mercury vapor, or metal-halide lamps), infrared, and the visible spectrum are damaging. Photographic materials are especially light sensitive.

The standard for paper-based media is straightforward. Paper-based records should be boxed or stored in protective furniture and exposed to light only during use or processing. The standard guideline for exposure of paper-based materials is 50 lux/5 foot-candles with an ultraviolet component no greater than 75μW/lumen for a "limited" time. Limited is a subjective measure. The limit often suggested for exhibition of light-sensitive paper-based artifacts is six weeks.

See "Temperature, Relative Humidity, Light, and Air Quality: Basic Guidelines for Preservation" and "Protection from Light Damage" at www.nedcc.org for more detailed background information. See "Protecting Book and Paper Collections During Exhibition" for more on exhibition issues.

Westford. Light levels are not monitored, nor did this surveyor take readings during the site visit. Blinds cover the windows in the town clerk's office, but they are not closed when the room is not in use or the building is closed. Overhead fluorescent lights in the office are filtered. A bare incandescent bulb illuminates the clerk's vault. Lights are turned off in collection storage areas when they are unoccupied.

Recommendations. Lighting was not discussed as part of this survey, but in general, long-term display of particularly light-sensitive materials is inadvisable. Every practical means of light mitigation should be employed for the collection including reduction of both UV and visible light. UV-filtering sleeves should cover all fluorescent lights in the office and storage areas. Supplies should be made available and custodial staff made aware of the importance of replacing sleeves when replacing or changing bulbs. UV-filtering sleeves lose their protective capability over time, depending on rate and amount of exposure. Filters have a life expectancy of approximately 5-7 years. A regular maintenance and change-out schedule should be established. Bare bulbs should be covered to protect the collection and staff from glass shards should the bulb break.

D. Security

Standards for security are informal and are set by the individual institution, but certain procedures for library and archival collections are generally accepted in the preservation community. Access to collections must be controlled during work hours,

and the building must be well secured when it is closed to the public. It is best to install perimeter intrusion alarms and internal motion detectors wired directly to the local police department or to another independent monitoring agency. For the purpose of controlling access during work hours, as well as controlling loss of materials, it is best to limit open entrances. Ideally the public and staff should use one entrance alike. All other doors should be alarmed to detect unauthorized use.

Collections-holding institutions should not use master key systems. Building keys and keys to areas where special collections are kept should be strictly limited. A list of key holders should be kept current, and staff members should be required to return keys when they leave the employ of the institution. Use of valuable materials by researchers must be carefully controlled and strictly monitored. See "Security from Loss: Water and Fire Damage, Biological Agents, Theft and Vandalism" at www.nedcc.org for additional information on maintaining security.

Westford. Security was not discussed as part of the survey, however information provided by the Town Clerk reveals that there is no automated intrusion alarm system in Town Hall. Many windows in the building do not have locks. Every employee in the building has a key, and locks are not changed when there is a change of staff. A rolling grate securing the service desk in the town clerk's office is lowered and locked and the door to the vault is closed and locked each afternoon. The custodian locks the building and the town clerk's office each evening. The basement vault door is never closed because of its faulty locking/closure mechanism.

Recommendations. Daily shutting and locking of the security door, grate and office door in the town clerk's office is good and should continue. The door to the basement vault should be removed to prevent a member of the staff or public from becoming accidentally closed into the space. (There is no reason to repair the door because the space is completely inappropriate for storage of archival materials.) A false sense of security may be fostered since Town Hall is located next door to the police department. However, a building-wide security system should be installed to protect the historical, archival and sensitive records kept by all the departments housed in Westford's Town Hall. Security locks should be installed on every window in the building. Once accomplished, the custodian should check that all windows are locked each evening.

Permanent collection materials should be moved immediately to a secure environmentally-managed facility during the closure of Town Hall. Until they are moved, appropriate measures should be taken to insure their safekeeping. Measures would at the very least include insuring that storage areas are locked and that a security officer is assigned to regularly check for water leaks and vandalism.

E. Emergency Preparedness

Emergency preparedness has become routine preservation practice in libraries and archives in the past decade. It is a fundamental component of responsible custody.

Standards for the evaluation of adequacy are informal. It is understood that every institution with collections of enduring value should evaluate its risk of events that could damage holdings. Plausible risks should be addressed and reduced, and the institution should prepare a formal, written plan for responding to emergencies identified as being within the scope of its plan. There are many reliable guides to emergency preparedness available in the professional literature. Additional information on emergency planning and response is available at www.nedcc.org. An electronic template for creating a disaster plan is available at www.dplan.org.

Westford. Emergency preparedness was not discussed.

Recommendations. If a plan for the site does not exist, has not been updated or if staff is not trained regularly, these practices should be reexamined. A priority list of individual objects within the collection along with storage locations should be created if one does not already exist. The template at www.dplan.org could prove useful whether a plan must be created or updated.

F. Storage Methods

The preservation community has developed widely accepted recommendations for choosing storage furniture, choosing storage enclosures, shelving collections, and rehousing collections into archival enclosures.

The choice of shelving materials is important for the preservation of collections of long-term value. Storage furniture can produce by-products that react to form acids and other damaging chemicals in the presence of moisture and oxygen. This may be a serious problem in closed furniture like map cases, file drawers, locked bookcases, or exhibit cases, where pollutants can build up. See "Storage Furniture: A Brief Review of Current Options" at www.nedcc.org for recommended types of storage furniture and companies that supply it.

Poor storage methods can cause unnecessary damage and shorten the useful life of collections. Proper shelving practices can help to minimize damage. In general, books should be stored upright, standing on their tails, supported by each other and by bookends. They should not be allowed to lean to their sides, since this strains the bindings. Books should not be shelved so tightly that retrieval requires force. Tight shelving can cause abrasion of coverings as well as torn head caps and spines as books are removed and reshelved. Books should never be shelved with the spine up, since the weight of the pages will pull the text block out of the cover. Broad-edged ("non-knifing") bookends are safer than the knifing variety, which allow books to be cut by a sharp edge. Broad-edged bookends are available from library suppliers. Although more expensive than knifing varieties, broad-edged bookends should always be used for rare and special collections. In general it is advisable to maintain an air space of two to three

inches between books and the back walls of bookcases or back edges of bookshelves. This is especially important in areas with high humidity or poor air circulation.

If possible volumes should be shelved by size. Large books should not be stored next to small books because they are not adequately supported by them. Paper and cloth bindings should not be stored in direct contact with acidic deteriorated leather bindings. Acidity and oils in the leather migrate into paper and cloth and hasten their deterioration. Further, degraded powdery leather can soil paper and cloth. Books should not extend beyond the edges of shelves into aisles because they are subject to being bumped or otherwise damaged. If necessary, additional oversize shelving should be provided.

As a rule, volumes should not be stacked in piles on shelves. Books should be stacked only when absolutely necessary, and the stacks should contain only two to three volumes. This may necessitate inserting additional shelves at narrow intervals. Ideally all volumes that are stacked should be individually boxed. Volumes with bindings of artifactual value should be stacked only if they are boxed to prevent abrasion to bindings.

Artifactually important volumes with fragile bindings that must be retained in their present condition as much as possible should be boxed. Damaged books that have low value or are rarely used and do not warrant treatment or repair of the binding should also be boxed. Both drop-spine and phase boxes made of conservation-quality materials are acceptable. Drop-spine boxes have been preferred because they provide more support and keep volumes cleaner than some phase boxes. However, drop-spine boxes are more expensive than phase boxes and most volumes may need to be housed in phase boxes in order to address the boxing needs of the entire collection. An additional advantage of phase boxes is that they generally contain no adhesives.

Low-lignin buffered folders, boxes, and other storage materials are appropriate for all collections of permanent value. Chemically stable storage materials are available from most conservation suppliers. Store objects of the same size and category together.

Westford.

Storage furniture: Built-in wooden shelving in the office vault is excessively deep and built floor-to-ceiling. Shelves appear to be 18”-24” deep and are not adjustable. Staff members must stand on a stool in close quarters and move materials to reach items in the backs of shelves.

Volumes on the shelves are crowded. Some books are housed upright. Volumes that are housed flat are stacked more than three high. Most oversize volumes are intershelved with smaller volumes. Some ledger books are stored upright and have been crushed and abraded by being wedged tightly against shelving. Some types of damage displayed by many older volumes in the various collections—detached boards and spines and broken joints and internal hinges—are likely partly the result of poor environment and past use, but are also in part due to tight shelving. Removing and replacing tightly shelved volumes is wearing and potentially very damaging physically.

Several cartons are housed on the floor of the vault. The contents are unknown to

the surveyor.

Recommendations. Typical solutions for overcrowding include: replacing fixed shelving with compact, movable shelving; expanding the space available for collection storage through an addition or use of remote storage; and deaccessioning material. The first floor of Town Hall probably could not bear the added weight created by compacted collections, but it is possible that the structure could support compact shelving in the basement, if the basement was adequately adapted and environmentally managed. As stated earlier in this report, a structural engineer should advise the town about the feasibility of installing a Bally room and/or compact shelving in the basement. In any case, the space would need to be fully renovated to eliminate mold- damaged building materials and a more comprehensive environmental management system installed. If a new Town Hall facility is constructed, adequate and proper storage should be carefully planned for.

Improvements in protective enclosures for other volumes recommended below will undoubtedly increase the shelf space required to properly house the collection. Even if recommendations for boxing many of the volumes were ignored, measures should be taken to find more space for collections.

Ideally, oversize volumes should be housed flat. The present shelf configuration provides no possibility for proper flat shelving. If new shelving is purchased at some time in the future, closely spaced wide shelving should be included. Oversize materials should be boxed individually and stacked no more than two to three high.

Storing materials overhead is not an ideal arrangement, especially in tight quarters such as the current office vault. Storing materials two layers deep compounds the wear and tear to already fragile volumes and should be avoided.

***Collection storage*:** Very few items in the collection are stored in boxes. Some paperbound items are slipped into polyester film sleeves and housed in ring-binders. A few items are in polyester film sleeves. Some of the sleeves are tight, and removing and replacing items is difficult and damaging. The vast majority of the collection is housed directly on the storage furniture rather than in protective enclosures.

Ephemera, loose paper fragments, manuscripts notes and addenda are loose in some volumes and attached in others Added material can create pressure on the joints and internal hinges, which leads to damage to the binding structure over time. It may also prevent volumes from closing completely providing entry points for light and dirt.

Recommendations. Housing volumes in protective enclosures protects them from light, dirt and shelf wear. Housing the collection in protective enclosures will increase the required shelf space, but most volumes should be boxed in custom-made phase boxes. The one volume in a parchment binding should be housed in a drop-spine box with a fore-edge flap that would help restrain the parchment during fluctuations in relative humidity. Unfortunately, all rehousing will require additional shelf space.

Two kinds of phase boxes are recommended. Many commercial library binderies such as Acme Bookbinding, Bridgeport National Bindery, and Ocker and Trapp make button-tie phase boxes. Phase boxes made by Custom Manufacturing Inc. (CMI) and ICI Bookbinding, appropriate for many materials in the collection, are generally less expensive to purchase, but require some staff time for assembly. They take up slightly less shelf-space than conventional button-tie boxes. Otherwise, button-tie phase boxes and CMI or ICI phase boxes are more or less equivalent in protection provided and stability of materials. All CMI and ICI boxes are lignin free; lignin-free button-tie boxes are also available.

Volumes with especially powdery leather can be isolated from the rest of the collection by various methods. Consolidation of the leather with Klucel G is sometimes appropriate but can only be expected to last eight to ten years. Polyester film dust jackets contain powdery leather during use and allow the books to be shelved in their usual order; spine titles can be read through the polyester film, and call number tags can be adhered directly to the polyester film. Alternatively, a volume can be housed in a phase box (if use is expected to be very low) or rebound if the present binding has little or no significance. (See "Protecting Books with Polyester Film Dust Jackets" at www.nedcc.org).

G. Handling Practices

Handling of collections encompasses housekeeping, control of food and drink, shelving and retrieving materials, photocopying procedures, and education of staff and users in proper handling procedures. Handling also includes marking procedures for historical and rare collections.

Eating and drinking should be prohibited (especially in collections storage areas), since this can attract insects and rodents. Storage areas and collections should be cleaned systematically, since dust and dirt also attract pests. Books and storage boxes should be cleaned about once a year to prevent soiling and abrasion of paper, depending on the fragility of the books and the effectiveness of the filtration system. Feather dusters only rearrange dust; dust and dirt should be carefully vacuumed, preferably with a 3-stage filter vacuum to prevent recirculation of dust through the exhaust. It should be remembered that the handling involved in cleaning fragile material can be damaging. Special care should be taken when handling older material in original or fragile bindings and text blocks with brittle paper. "Cleaning Books and Shelves" at www.nedcc.org provides detailed instructions for cleaning collections. See "Integrated Pest Management" at www.nedcc.org for information on controlling pest infestations.

Much damage can be avoided by using non-damaging techniques when handling collections. Reshelving, transportation on book trucks, collections processing, photocopying, and deposit in book drops can all cause damage to books and other materials. Changes in handling techniques involve relatively little time and expense, and improvements in handling will help to prevent serious and more costly damage. Both staff and users should be trained in proper handling procedures for various types of

collections. General instructions for proper handling are given in "Storage Methods and Handling Practices" at www.nedcc.org.

Books are unnecessarily damaged during photocopying. Photocopy machines with flat copy platens necessitate forcing the text block to open flat in order to get a good image. Better machines are those with edge platens, which allow a book page to be copied with the book open to only a 120° angle instead of 180°. Few photocopiers suitable for copying books safely are available and these are expensive. While these machines can decrease the potential for damage, the intense handling required in photocopying large numbers of pages is almost always damaging. If photocopying of historical and permanent research value is allowed, a suitable machine should be purchased, only staff members should do the copying, and copying should be done on a limited basis and only when it can be done without causing damage to the objects themselves. Some materials should never be photocopied. Photocopies should be made only from a microfilm copy of such books.

Call numbers should not be painted on books that are of special value, nor should they be typed onto labels and taped to volumes with pressure-sensitive tape or attached with adhesive. Paint is unattractive and disfiguring; tape and adhesive may discolor and stain the binding. Ideally volumes should be boxed and the call number placed on the box. For volumes that are not boxed, call numbers should be typed onto heavy buffered paper flags placed inside the volumes. These flags should be about two inches wide and two to three inches longer than the book is high. The flags should not have a notch to fit over a page because these are potentially damaging, especially to brittle paper. These marking concerns are not applicable to volumes that have been rebound into commercial library bindings.

Keeping books clean will extend their useful life. However, cleaning can be somewhat damaging to fragile bindings, which cannot withstand the handling required to clean them. Judgment must be used in deciding when to clean volumes. During cleaning, acidic inserts should be removed from volumes so that acidity in the inserts does not migrate into book pages and damage them. Rusting paper clips and other damaging fasteners should be removed so that they do not stain or crease pages. Self-adhering paper place markers, i.e. "post-it" notes should not be used.

Westford. Food and drink are allowed in the Town Clerk's office. Trash removal and cleaning practices were not discussed.

There is no regularly scheduled cleaning program for books and shelves and neither have been cleaned in the past five years. The bindings, text block edges and exterior leaves of the volumes are dirty to varying degrees. Some text blocks are soiled or dusty throughout. There is debris on the floor of the office storage vault. According to the Town Clerk, staff has plans to clean the vault floor and shelves and line shelves with polyester film.

Some books are identified with typed paper labels adhered to their spines with pressure-sensitive tape. Some volumes are not marked. Slips of paper, "post-it" notes, paper clips and rubber bands were observed on volumes during the survey.

Photocopying of material was not discussed, but staff would undoubtedly perform any photocopying in this limited access collection.

Recommendations. While staff members often eat lunch outdoors or in a common staff room, lunch and snacks are sometimes eaten at desks in the office. A food and drink policy should be established to limit damage caused by possible spilling and staining of materials or by attracting pests. Cleaning books and shelves on an established schedule is important because dust and dirt attract insects and provide a substrate for mold growth. Cleaning will require time, but ultimately would reduce the susceptibility of the collection to mold growth and insect infestations as well as benefit the collection in general.

Typed paper labels should be removed as volumes are conserved. Unfortunately, many leather bindings will be skinned by the removal of pressure-sensitive tape. Paper clips and inserts, rubber bands and other place markers should be removed from all volumes.

It is a good idea to line shelves to protect unboxed books from abrasion using a sheet of buffered museum board cut to fit each shelf.

H. Reformatting

When only content needs to be preserved, or if the value and condition of material makes it necessary to limit handling, several reformatting strategies are available. In the case of original photographs, unique or valuable materials, or fragile items, a copy is preferable for researchers' use, at least for initial examination. Photocopies and microfilm can provide preservation-quality copies, while digitization is an excellent tool for researcher access but is not yet considered a preservation medium. As digital imaging evolves, and its potential is carefully studied, a gradual partnership with preservation microforms is evolving. For additional information on digitization, see *Handbook for Digital Projects: A Management Tool for Preservation and Access* at www.nedcc.org.

In-house or contract photocopying onto permanent durable paper is an excellent way to preserve acidic paper materials such as news clippings. Paper used for preservation photocopying should meet the ANSI/NISO Z39.48/1992 (R1997) standards for paper permanence. A number of facilities specialize in facsimile reproduction of brittle books on buffered paper. Some of them are listed in the suppliers list at www.nedcc.org.

Despite increasing interest in new technologies, preservation microfilming remains an established and valued preservation strategy. Properly produced and properly

stored preservation microfilm has a lifespan of about 500 years. Filming can provide a use copy for artifacts that are too fragile to be used, and it can provide a preservation copy for materials that are badly deteriorated and valuable only for their informational content. In most cases, preservation microfilming is contracted out. There are standards for the production of preservation-quality microfilm; these are detailed in "Microfilm and Microfiche" available at www.nedcc.org; when undertaking a microfilming project, an institution should insure that these standards are met.

Westford. There is presently no formal reformatting policy for bound materials. Many volumes have been reformatted as microfilm or microfiche. It is possible that some information was not captured during filming because of tight bindings and overlapping scraps attached to pages. In addition, it is uncertain if the film and fiche meets established preservation standards. A few reels of microfilm are stored in the office vault with the original documents.

Town administrators have expressed interest in digitizing collections. Digitizing is not yet universally considered to be a preservation medium, but is an excellent access tool. It should be considered to be one piece of a comprehensive preservation plan.

Recommendations. The Town Clerk should begin a project to determine the quality of microfilm. The film should be examined to determine its condition and whether it meets ANSI standards. If not, the Association might consider a second reformatting project for historical and archival materials. NEDCC preservation microfilming staff could examine a sample of the microfilm. Presumably one method of reformatting is preferable to two; items that have been microfiched could be recaptured as microfilm. Microfilm master negatives should be stored in a different building than the originals if they are to properly serve as preservation copies of the originals. A microfilm reader should be purchased so that film can be used and original material can be stored elsewhere in an environmentally-managed storage area. Alternatively, the interpositives or use copies could be deposited at the public library where a microfilm reader is available.

Great care should be taken in deciding to scan single images or entire volumes. Many collections-holding institutions, including the Smithsonian and the Library of Congress, have formulated policies concerning scanning of rare material that might prove useful. The Library of Congress has produced a paper "Conservation Implications of Digitization Projects" that is available at www.lcweb2.loc.gov/ammem/techdocs/conserv83199a.pdf. The Smithsonian's policies include many common-sense principles such as: only digitizing materials that belong to the institution; only scanning complete materials with inclusion of dust jackets and advertisements considered a plus for print material; scanning materials that are primarily visual (rather than textual) in nature; and not digitizing materials that either have been digitized previously or exist in microform. Policy precludes disbinding or damaging volumes solely for digitization. Ownership and copyright issues should be carefully considered as well when selecting material to be digitized.

I. Library Binding

In recent years numerous discussions of considerations for binding research materials have appeared in the library literature. Any institution that uses commercial library binding for preservation purposes should be familiar with the options that have replaced oversewing/ "Class A" binding, and should specify standards, procedures, and guidelines covering the range of materials in a library's binding program. Books returned by the binder should be individually inspected for quality of work and adherence to these specifications. Volumes with value as artifacts should never be rebound using library binding techniques or materials. Paper must be strong enough to withstand library rebinding without additional treatment.

A formal national standard for commercial high volume library binding was published in March 2000 and is known as the ANSI/NISO/LBI Standard for Library Binding (ANSI/NISO/LBI Z39.78-2000). Standards can be purchased via the NISO web site at www.niso.org or through NISO Press Fulfillment Office, PO Box 451, Annapolis Junction, MD 20701-0451. This standard replaces formal industry standards detailed in the 8th edition of *The Library Binding Institute Standard for Library Binding* (1986, Paul Parisi and Jan Merrill-Oldham, eds. The Library Binding Institute, 8013 centre Park Drive, Austin, TX 78754).

Westford. Commercial library binding was not discussed in depth during this survey. Some volumes, such as *Annual Town Reports* have been bound into commercial library bindings over the years. These volumes exhibit some problems that are the result of practices that do not conform to the standards described above.

Recommendations. Commercial library binding is appropriate for some materials of permanent value. *Annual Town Reports* which are published yearly and whose spine adhesive has failed could be commercially bound. Several typescript volumes on onion skin paper could be preservation photocopied and bound commercially as well.

J. In-House Repair Conservation Treatment

Book repair procedures for general circulating collections should not be used on historic materials with artifactual or permanent research value. Non-conservators can use a few techniques safely. Other treatments must be performed by professional conservators who have experience with these treatments and proper equipment to insure that the treatments are performed safely and effectively. Paper collections with artifactual or permanent historic value should not be treated in-house; if you are unsure whether an object is appropriate for in-house treatment, consult a conservator before proceeding.

In the context of historical collections, "safe" in-house techniques include rehousing and simple cleaning of bindings and pages. (See "Surface Cleaning Paper" at www.nedcc.org). Paper that has artifactual or permanent research value should only be

mended using conservation-approved methods and materials. Pressure-sensitive tapes and many other adhesives have proven unstable over the long term, and many will cause permanent damage. A conservator should remove pressure-sensitive tapes and other previous defacing repairs.

Conservators once recommended potassium lactate and leather dressing to libraries for consolidation of leather. Unfortunately, these were often applied with a heavy hand, and unforeseen chemical damage has resulted. Most conservators now feel that librarians should not treat leather bindings other than to wipe them with a soft cloth and to box them. Oils can trap dirt, migrate into text blocks, and result in bindings exuding fats in humid environments.

Treatment of individual books or other objects should be determined by their value to the collection and the availability of funds for conservation. Setting priorities should be the first step in treatment: criteria to be considered include condition; monetary, historical, or artifactual value; importance for research; and expected use. The choice of a treatment for any category or object in a collection will depend on the value of the object in its original form, the importance of the information it contains, the condition of the object, and the need to provide access to the original artifact itself, rather than to its contents alone.

Only professional conservators or technicians working under professional supervision should perform conservation treatment of artifacts. If large quantities of material require treatment, priority usually goes to conservation and preservation choices that prevent additional damage during predicted use (e.g. research, exhibit, long-term storage). When material has unknown value, or when it will only be handled rarely under good supervision, boxing or providing some other form of protective enclosure is sometimes the best strategy.

See "Conservation Treatment for Works of Art and Unbound Artifacts on Paper", "Conservation Treatment for Bound Materials of Value," and "Choosing and Working with a Conservator" at www.nedcc.org for more information on conservation treatment.

Westford. Book repair and collection care was not discussed in depth during the survey. Staff members have been disbinding bound *Certificates of Marriage* and placing certificates in polyester film sleeves and 3-ring binders. In the past, typed spine labels were adhered to the spines of volumes with pressure-sensitive tape. Tape was also used to attach loose materials or accompanying scraps and documents to record book pages.

Recommendations. Basic repairs used for circulating library collections should not be performed on volumes in this collection. Pressure-sensitive tapes should never be used to repair tears or to attach addenda. Staff members can continue to place marriage licenses in polyester film sleeves. This is a good solution for small documents that are accessed on a regular basis. However, the pH of the paper should be tested and pages should be deacidified non-aqueously, if necessary, prior to sleeving,

Any materials in these collections that require conservation should be treated by a conservator who adheres to the *Code of Ethics* and the *Standards for Practice* of the American Institute for Conservation of Historic and Artistic Works (AIC) at www.aic.stanford.edu.

V. CONSERVATION NEEDS AND RECOMMENDATIONS

As many volumes were examined during the site visit as possible, but no more than one hundred twenty volumes, or 39% of the collection, were examined individually. The approximately sixty volumes stored in the basement vault were not examined during the site visit. Their exclusion from the survey accounts for the low number of mold-damaged materials listed below.

Information gathered in an item-by-item survey includes title and date of volume, number of pages, measurements, binding materials, page attachment method, contents (loose scraps, attached scraps, marginalia, etc.), binding damage, and paper damage. A treatment and cost estimate is proposed for each volume based on this cursory evaluation. A priority level is assigned to the volumes based on binding condition, Level 1 being the highest priority level and Level 5 the lowest. A Level 1 priority is assigned to a volume in which the sewing is broken, pages are detached from the textblock, boards are detached, there is pressure-sensitive tape, evidence of mold damage, or brittle paper. Levels 2 and 3 indicate that volumes are in less urgent need of treatment, but still need the attention of a conservator. Level 4 is assigned to volumes that need only minor treatment including reformatting, spray or mass deacidification, or rehousing. Depending on the skills available, treatment may be done by the client/institution or in combination with a conservator or specialist. Level 5 volumes are stable and need no treatment.

In addition, a treatment level is assigned based on the degree of difficulty of the treatment – extensive, moderate, or minor. Extensive conservation treatments include removal of sewing and disbinding, washing of pages, aqueous or nonaqueous deacidification, resewing and rebinding or rebacking, or encapsulation and post-binding. Minor to moderate treatments include the following, or a combination of the following treatments: surface cleaning, hinge tightening, repair of joints and internal hinges, sewing, removal of destructive material, removal of pressure-sensitive tape, rebacking, rebinding, and binding stabilization.

Item-by-Item Survey Summary of Findings

Total objects examined: 120

Binding types/categories:

Quarter leather	52
Reverse calf	10

Full leather	6
Parchment	1
Cloth	33
Commercial library	4
Stiff paper wrapper	9
Printed paper	4
No binding	1

Page attachment (major types other than “sewn through the fold”):

Oversewn	7
Metal post binding	4
Stab sewn	3
Stapled	3
Three-ring binder	3
Adhesive	3
No page attachment	1

Commonly recorded binding damage:

Worn	112
Surface dirt	50
Hinges broken	19
Joints broken	7
Boards detached	2
Boards missing	2
Boards warped	8
Spine missing	2
Spine partially missing	6
Sewing broken	5
Sewing weak	2
Insect damage	1
Water damage	6
Mold damage	1

Commonly recorded paper damage:

Surface dirt	116
Acidic	119
Discolored	109
Minor tears	42
Major tears	9
Detached or missing leaves	23
Pressure-sensitive tape	13
Stained	15
Iron gall ink damage	10
Foxing	6
Brittle	5

Mold damage	2
Water damage	2

Treatment Priority Level:

- Level 1 (highest priority) 46, or 38% of items surveyed
- Level 2 18, or 15%
- Level 3 42, or 35%
- Level 4 13, or 11%
- Level 5 1 volume

One hundred twenty volumes, or 39% of the collection, were examined during the site visit. Of the volumes examined:

- 47 (39%) require extensive conservation treatment
- 72 (60%) require moderate treatment
- 1 volume requires minor treatment.

The estimated cost to conserve volumes based on priority level is as follows:

- Level 1 volumes --- $155,850.
- Level 2 volumes --- $53,800.
- Level 3 volumes --- $82,330.
- Level 4 volumes --- $13,100.

While treatment proposals and cost estimates are approximate and non-binding, the initial projected cost to conserve the volumes examined during the site visit totals $305,080. It is important to remember that only 39% of the collection was examined. Using this ratio, a projected cost to conserve the entire collection is $802,842.

Certificates of Marriage are often requested and need to be photocopied. Disbinding the certificates and housing them in sleeves has made this process relatively simple. Certificates can easily be taken out of the sleeve and copied, or copied in the sleeve, and then replaced in correct order in the binder. *Marriages, 1935-1939* is an example of a volume that has already been rehoused.

Certificates of Marriage, 1905-1920 and *1921-1934* are cloth-covered adhesive-bound volumes. The textblocks are comprised of single leaves (certificates) with printing and sometimes manuscript information on both sides. Additional manuscript and typed documents are paper-clipped, adhered, and sometimes bound into the volumes. Some documents are folded.

Certificates of Marriage, 1991-1993 is comprised of certificates in metal post bindings. Additional documents are stapled onto leaves; some are oversized and folded.

Disbinding and sleeving is a good solution for heavy-use items such as marriage certificates. However, some preparation and treatment prior to rehousing is recommended, including microfilming; collating; surface cleaning if necessary; releasing overlapping scraps; removing paperclips, staples and pressure-sensitive tape; and nonaqueous deacidification. Staff could then place the certificates in polyester film sleeves. Certificates should be stored back-to-back, two to a sleeve if there is no information on the verso, or individually in sleeves if there is pertinent information on the verso. Ideally, certificates should not be removed from the sleeves for photocopying.

The sleeves should be made of Melinex 516 or polyethylene and housed in high-quality ring-binders. Computer-generated paper title labels could be adhered to the spines. Continued disbanding and sleeving by staff should perhaps be delayed until a more planned approach can be established.

Annual Town Reports are an example of volumes issued annually that must be retained permanently. These volumes are listed in the database by groups based on how many individual issues could be housed together. Each issue has been placed in a polyester film sleeve and the sleeves are in one ring-binder. *Annual Town Reports 1903-1909* is a group of nine issues housed together in a binder. The volumes are paper bound. The leaf attachment varies; some are adhesive-bound and some are side-stapled through signatures. The pages of some are dirty; some have tears; some covers are detached.

Annual Town Reports 1960-1969 is a group of ten volumes, each in an individual sleeve housed in a ring binder. *Annual Town Reports 1976-1979,* a group of four volumes, are housed two volumes per sleeve. The housing for the *Annual Town Reports* is inadequate. Volumes are not properly supported in polyester film sleeves. The tops of the books are not protected from dirt. Given the crowded and haphazard nature of storage in the vault, books can fall out of the sleeves or become lost. Covers can be torn when removing volumes from or replacing into the sleeves. In order to gain access to one volume in a group, all the issues then must be handled.

Volumes should be removed from sleeves and housed either in individual CMI phase boxes or in individual folders in document storage boxes. Volumes should be microfilmed. Individual items should be conserved as well. Staples used as leaf attachment should be removed. Volumes with signatures can be sewn through the fold and their paper covers mended or lined as needed and reattached. Many *Annual Town Reports* could be commercially bound. The pH of the paper should be tested and items nonaqueously deacidified if necessary.

Annual Town Reports 1981-2005 consists of loose paperbacks in a banker's box. They are housed together because staff has not yet had time to place them in sleeves and ring-binders. Some of the bindings in this group are broken along spine and pages are detached. All appear to be adhesive-bound. These items also could be treated as monographs and be commercially bound in individual issues.

According to the Town Clerk, some annual reports have been printed on recycled paper and the paper quality is uncertain. One issue in this group is printed on a

completely different sized paper than all others. These problems illustrate the necessity for written guidelines for printing town publications. A written plan should also address the binding needs for these and future publications. Requirements might include:

- reports should be printed on buffered paper
- design and layout should take binding requirements into consideration
- several copies should be bound by a commercial binder according to LBI standards

At some point in the past, duplicate issues of these publications were gathered together and bound in groups. Unfortunately, there are some problems evident in these bindings. Pressure-sensitive tape was used to attach scraps to pages. There are notations written in the margins of the text. Exterior sections are oversewn and some are torn. Heavy cloth guards on endsheets have created breaking edges. Some volumes have loose hinges.

While some damage is relatively minor and is a result of use over time (i.e. loose hinges), other damage is caused either by poor binding methods or poor handling. This group of volumes illustrates the need for standards and selection. Information should be microfilmed. Decisions should be made about which copy of duplicates to bind -- those with marginalia or not, those without tape, etc. This large group of volumes that span one hundred years of publication necessitates a retrospective plan to address the needs of older volumes and a plan that addresses the needs of current and future volumes.

Selectmen's Meeting Minutes 1946-50 and *1960-61* are comprised of leaves with cloth strips adhered along spine edge for housing in ring-binders. The cloth strips are intact currently. Leaves would be loose and in danger of being lost if the adhesive fails. Treatment for these items might include collating leaves, microfilming, removing pressure-sensitive tape, mending, nonaqueous deacidification and boxing. Use of the originals should be restricted and access provided by the microfilm. Perhaps the cloth strips could be removed and the volumes rebound by a commercial binder who adheres to LBI standards? *Selectmen's Meeting Minutes 1962-65, 1980-81*, and *1982-84* require tape removal, mending, minimal cleaning and nonaqueous deacidification.

Westford Union Society Notes 1852 is a single signature bound in quarter leather and paper. It should be placed spine down in a folder and housed in document storage box with similar materials or housed in a CMI phase box.

List of Assessed Polls 1886-1896 and *State Aid 1915-1922* are examples of volumes with fairly simple treatment needs. Preservation strategies include microfilming, surface cleaning, nonaqueous deacidification and boxing. Neither volume has been titled with a taped-on typed label, so pressure-sensitive tape removal is not necessary.

Street Listing 1939-1950 contains 1500 pages. Treatment would include disbinding, microfilming, surface cleaning, and nonaqueous deacidification. The volume could then be split and commercially bound into two or three volumes.

One volume examined during the survey, *Records Vol. 2, 1764-1790*, had been previously conserved in 2004. It is stable but should, however, be housed in a phase box or drop-spine box.

VI. CONCLUSIONS AND PRIORITIES

The bound volumes in the Westford Town Clerk's office are of great importance to the Town and Commonwealth. Some are interesting for their artifactual value, but all are important for their intellectual content.

Materials in the collection are of interest to researchers, townspeople, town administrators and historians. The tension between the need for access to and preservation of paper-based materials is frequently resolved by reformatting fragile materials to which access must be provided. Demand for access to original materials in the collection is ongoing, making reformatting an ideal preservation strategy for the collection. Preservation microforms of material increase accessibility while protecting the original materials from damage during repeated handling.

For volumes with artifactual value, conservation treatments should be minimal if at all possible. Unfortunately, many volumes are unstable physically and chemically due to environmental conditions and past use. Storage conditions within Town Hall are inadequate for the size and needs of the collection. The town should redouble its efforts to provide environmentally managed storage in the form of the proposed archives center or in an off-site facility. For volumes that require conservation, original bindings should be retained if possible.

Some preservation goals for the collection can be achieved relatively quickly. Others will require careful, long-range planning, substantial financial commitment and additional time. Achieving these intermediate to long-term preservation goals will greatly contribute to the longevity and stability of the collection. If some of the tasks recommended below seem overwhelming, it is important to remember that many tasks can be broken down into manageable projects. Some actions can or must be implemented immediately, while others may require diplomacy, education, and funding efforts over several years.

At this time, the highest priority *preservation* goals for the collection should include the following:

- Move collection from Town Hall building and house in an environmentally-managed off-site facility.
- Renovate Town Hall or construct a new facility with a managed environment.
- Continue to search for a temporary or alternate storage space with managed environment. Consider installing a Bally room in the basement of the Town Hall building following renovation, or in an alternate site.

- Remove all archival material from the basement vault and assess its condition. Develop and implement a preservation strategy for these materials that would include vacuuming to remove fungal structures, rehousing, and deaccessioning.
- Establish a maintenance plan and schedule for Town Hall. Correct structural and system faults that contribute to the deterioration of the collections.
- Determine the quality of the present microfilm. Store master negatives in a secure, environmentally managed facility separate from interpositives. Consider a second reformatting project for materials if the microfilm is damaged or does not meet ANSI standards.
- Purchase a microfilm reader. Limit the use of original materials.
- Purchase monitoring equipment and continue monitoring temperature and relative humidity.
- Create a formal, written preservation plan for the collections.
- Increase cleaning activities. Clean collections and shelves as needed using a HEPA-filtered vacuum.
- Continue the rehousing of materials in concert with conservation professionals.
- Determine the value and proper location of loose scraps in volumes. Remove all place markers, scraps that have no relevance, paperclips, rubberbands, etc. Provide strips of buffered paper to staff and researchers if needed for place marking.
- Establish greater intellectual control of the collection including deciphering the relationship of volumes that are stored together.
- Continue to secure funding for preservation projects.

The highest priority *conservation* goals for the collection should include the following:

- Begin conserving volumes with the highest priority level designation in the item-by-item survey.
- Conserve volumes not evaluated in the survey that have detached boards and spines, broken sewing, damaging repairs, brittle paper or mold damage.
- Secure funding for conservation projects.

Kaari Mai Tari, Town Clerk, was very helpful and informative before, during, and after the site visit. Ms. Tari and her staff are clearly interested in the preservation of this collection. Preservation planning, rehousing, and selecting materials for treatment will require effort and organization. With support from town and state administrators and adequate funding, a committed, dedicated staff can accomplish the goals set forth in the preservation planning survey report and in the reports of this surveyor.

I hope that this evaluation will be helpful in planning for the preservation of the bound collection. If the report has raised any questions, or if additional information is needed, please do not hesitate to call or write.

Respectfully submitted,

Mary Patrick Bogan
Senior Conservator
Northeast Document Conservation Center
Andover, MA

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